

We claim:

- 1 1. A method of providing authentication in a wireless communication system  
2 comprising the steps of:  
3 transmitting a first message to a first system, the first message comprising  
4 a mobile identifier for a subscriber of the first and a second system indicator  
5 indicating that the subscriber is attempting to gain access to a second system that  
6 uses an authentication process different than an authentication process used by the  
7 first system;  
8 receiving a second message from the first system having shared secret data  
9 associated with the subscriber;  
10 generating an expected response to a unique challenge using the shared  
11 secret data and an encryption algorithm; and  
12 transmitting the expected response to the second system.
- 1 2. The method of claim 1, wherein the second system indicator includes at least one  
2 of the following: an electronic serial number set to a default or null value; a  
3 system capability parameter indicating that the subscriber is roaming in a GSM  
4 based wireless communication system; or a system access type parameter  
5 indicating that the subscriber is attempting to gain access in a GSM based wireless  
6 communication system.
- 1 3. An logical network entity comprising:  
2 means for transmitting a first message to a first system, the first message  
3 comprising a mobile identifier for a subscriber of the first and a second system  
4 indicator indicating that the subscriber is attempting to gain access to a second  
5 system that uses an authentication process different than an authentication process  
6 used by the first system;  
7 means for receiving a second message from the first system having shared  
8 secret data associated with the subscriber;  
9 means for generating an expected response to a unique challenge using the  
10 shared secret data and an encryption algorithm; and

11 means for transmitting the expected response to the second system.

1 4. The logical network entity of claim 3, wherein the second system indicator  
2 includes at least one of the following: an electronic serial number set to a default  
3 or null value; a system capability parameter indicating that the subscriber is  
4 roaming in a GSM based wireless communication system; or a system access type  
5 parameter indicating that the subscriber is attempting to gain access in a GSM  
6 based wireless communication system.

1 5. A method of providing authentication in a wireless communication system  
2 comprising the steps of:  
3 receiving a first message at a first system, the first message comprising a  
4 mobile identifier for a subscriber of the first and a second system indicator  
5 indicating that the subscriber is attempting to gain access to a second system that  
6 uses an authentication process different than an authentication process used by the  
7 first system;  
8 determining shared secret data associated with the subscriber using the  
9 mobile identifier and the second system indicator; and  
10 transmitting a second message from the first system having the shared  
11 secret data.

1 6. The method of claim 5, wherein the second system indicator includes at least one  
2 of the following: an electronic serial number set to a default or null value; a  
3 system capability parameter indicating that the subscriber is roaming in a GSM  
4 based wireless communication system; or a system access type parameter  
5 indicating that the subscriber is attempting to gain access in a GSM based  
6 wireless communication system.

1 7. An authentication system comprising of:  
2 means for receiving a first message at the authentication system, the first  
3 message comprising a mobile identifier for a subscriber of a first system to which  
4 the authentication system is a part and a second system indicator indicating that

5 the subscriber is attempting to gain access to a second system that uses an  
6 authentication process different than an authentication process used by the first  
7 system;  
8 means for determining shared secret data associated with the subscriber  
9 using the mobile identifier and the second system indicator; and  
10 means for transmitting a second message from the first system having the  
11 shared secret data.

1 8. The authentication center of claim 7, wherein the second system indicator  
2 includes at least one of the following: an electronic serial number set to a default  
3 or null value; a system capability parameter indicating that the subscriber is  
4 roaming in a GSM based wireless communication system; or a system access type  
5 parameter indicating that the subscriber is attempting to gain access in a GSM  
6 based wireless communication system.